PUBLIC NOTICE

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Issuance of a Revised Air Quality Permit to
ARCO Alaska, Inc.
for the Operation of Central Compressor Plant
at Prudhoe Bay Unit, Eastern Operational Area
on the North Slope of Alaska

The Alaska Department of Environmental Conservation, under authority vested by AS 46.03.020, AS 46.03.140, AS 46.03.150, AS 46.03.160, 18 AAC 50.300, and 18 AAC 50.400, has amended an Air Quality Control Permit to Operate issued to ARCO Alaska, Inc., to allow the installation and operation of three new gas-fired turbines and one new process heater, and to upgrade thirteen gas-fired turbines at the Central Compressor Plant. ARCO Alaska, Inc. operates the Central Compressor Plant in the Prudhoe Bay operating area, and is located approximately 310 kilometers east of Barrow, Alaska.

The increase in emissions from the new turbines and procees heater and the upgraded turbines were subject to review under the Prevention of Significant Deterioration (PSD) requirements of the Air Quality Control Regulations because the emissions of one or more regulated air contaminants--in this case carbon dioxide and oxides of nitrogen--exceed the threshold established in 18 AAC 50.300(a)(6)(C)(i) and (ii). The PSD program is designed to limit increases in emissions, the resulting changes in air quality, and the degradation of air quality-related values in areas where existing concentrations are less than the ambient air quality standards set out in 18 AAC 50.020(a).

FINDINGS

Based on review by the Department, the air contaminant emissions resulting from the additions of three new turbines and a heater, and upgraded turbines to ARCO's Central Compressor Plant:

1. will not cause or contribute to a violation of any State Ambient Air Quality Standard or increment set out in 18 AAC 50.020(a) and 18 AAC 50.020(b) or the nitrogen dioxide (NO_x) increment established on Febraury 8, 1988, published in the October 17, 1988, Federal Register Volume 53, No. 200, page 40656, et seq.;

2. will be controlled by Best Available Control Technology;

3. will not significantly affect the air quality-related values of odor, visibility, vegetation, and soils of the State; and

4. is consistent with the Alaska Coastal Management Plan.

Copies of DEC's final Air Quality Control Permit to Operate and revisions of the preliminary Technical Analysis Document are available at the Department's Northern Regional Office, 1001 Noble Street, Suite 350, Fairbanks, AK 99701; or Central Office, 3220 Hospital Drive, P.O. Box 0, Juneau, AK 99811-1800.

Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.200-18 AAC 15.310 or waive rights to administrative review. The request must be submitted in writting, within thirty days of the date of publication of this notice to the Commissioner, Department of Environmental Conservation, P.O. Box O, Juneau, AK 99811-1800.

Dated at Juneau, Alaska, this 17th day of September, 1990.

Leonard D. Verrelli

Leonard D. Verrelli, Chief
Air Quality Management Section

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AIR QUALITY CONTROL PERMIT TO OPERATE

Permit No. 8936-AA006
Rescinds Permit No. 8636-AA005

Date of Issue: September 17, 1990

The Department of Environmental Conservation, under authority of AS 46.03 and 18 AAC 50.400, issues an Air Quality Control Permit to Operate to:

ARCO ALASKA, INC.
P.O. Box 100360
ANCHORAGE, AK 99510-0360

for the operation of the Central Compressor Plant facility. This permit is valid only for the equipment as described in Exhibits A through D of this permit and in the application and subsequent documentation listed in Exhibit E of this permit; where the permit is more stringent, the permit requirement applies.

The facility is located in the Prudhoe Bay Oil Field in Section 11, T 11 N, R 14 E, Umiat Meridian.

The following conditions apply:

1. Permittee shall notify the Department's Northern Regional Office, 1001 Noble Street, Suite 350, Fairbanks, AK 99701, in writing within 15 days of commencing construction of Sources Nos. 14, 15, 16, and 23, and modification of Sources Nos. 1 through 13 identified in Exhibit A of this permit.

2. If installation has not begun within 18 months of the effective date of this permit, permittee shall submit to the Department's Northern Regional Office a request for permit amendment which includes an updated control technology analysis and construction schedule.

3. Permittee shall comply with the State Ambient Air Quality Standards and Increments established in State Air Quality Control Regulation 18 AAC 50.020.

4. Permittee shall comply with the most stringent of applicable emission standards, limits, and specifications set out in State Air Quality Control Regulations 18 AAC 50.050(a)(1), (b)(1) and (c), and Exhibit B of this permit.

5. Permittee shall operate each of the standby gas turbine generators identified as Source Nos. 24 and 25 in Exhibit A of this permit, not more than 200 hours per year.

6. Permittee shall operate the five heaters identified as Sources Nos. 17, 18, 21, 22, and 23 in Exhibit A of this permit at not more than 120 percent rated capacity, and the two heaters identified as Sources Nos. 19 and 20 at not more than 110 percent rated capacity.

7. Permittee shall install, maintain, and operate, in accordance with manufacturer's specifications, fuel burning equipment, process equipment, emission control devices, and testing and monitoring equipment to provide optimum control of air contaminant emissions during all operating periods.

8. Permittee shall conduct source tests of three of the modified turbines, Source Nos. 1 - 13 and of one of the new turbines, Source Nos. 14 - 16, identified in Exhibit A of this permit, within 180 days following startup of the sources, to determine the concentrations and mass emission rates of nitrogen oxides using Performance Method 20 as specified in 40 CFR Part 60, Appendix A.

9. Permittee shall conduct the tests required by Condition 8 of this permit with the turbine operating at the maximum design rate.

10. If requested by the Department, permittee shall, within 60 days, perform source tests of any source identified in Exhibit A, using the applicable Performance Method set out in 40 CFR 60, Appendix A, to ascertain compliance with applicable standards and emission limits.

11. Permittee shall submit a source test plan for each test required by Conditions 8 and 10 of this permit to the Department's Northern Regional Office at least 30 days prior to the scheduled date of the test.

12. Permittee shall submit a report of the results of any tests required by Conditions 8 or 10, in the format set out in Appendix III Section IV.3 of the State Air Quality Control Plan, to the Department's Northern Regional Office within 45 days following completion of the set of tests.

13. Permittee shall conduct a monthly test of the natural gas burned at the facility to determine the sulfur (H_2S) content using the methods described in Exhibit C of this permit.

14. Permittee shall obtain a copy of the most recent test of the sulfur content of diesel fuel from the supplier for each shipment of fuel oil delivered to the facility, using the test methods specified in Exhibit C of this permit.

15. Permittee shall notify the Northern Regional Office by telephone (452-1714) or FAX (451-6130) promptly, but not later than 24 hours after the event, of any equipment failure which may increase air contaminant emissions beyond normal levels, or of any change in operating conditions which may affect air contaminant emissions, or may result in emissions of black smoke from the flaring systems exceeding 20 percent opacity for more than three minutes in any hour. The notification must include the nature of the occurrence, the expected duration, the steps taken to minimize emissions and avoid recurrence, and a general description of the weather.

16. Permittee shall submit a written report to the Department's Northern Regional Office summarizing the information required by Condition 15 of this permit for each event which occurred during each calendar month, by the fifteenth day of the following month.

17. Permittee shall provide access to the facility at any reasonable time to the Department's representative and any other person authorized or contracted by the Department in order to conduct an inspection or tests to determine compliance with this permit and State environmental laws and regulations. The Department's representative will abide by any health- or safety-related procedures prescribed by the permittee, while within the permitted facility.

18. Permittee shall submit a Facility Operating Report as described in Exhibit D of this permit to the Department's Northern Regional Office 1101 Noble Street, Suite 350, Fairbanks, AK 99701, semiannually, by the 30th day of January and July each year.

19. Permittee shall maintain relevant reports, test results, monitoring instrument recorder charts, and other applicable data necessary to determine compliance with this permit in an active file for not less than one year, and have them accessible on request to the Department for not less than three years.

20. Permittee shall clearly display a copy of this permit in the control room, and keep a copy of the current State Air Quality Control Regulations, 18 AAC 50 at the facility.

This permit expires July 30, 1995, and may be suspended or revoked in accordance with 18 AAC 50.310.

Dated this 17th day of September, 1990.

Leonard D. Verrelli

Leonard D. Verrelli, Chief
Air Quality Management Section

Exhibit A

SOURCE INVENTORY

	Source Number and ID	Source Description	Design Capacity HP or MM Btu/hr
1	NGT-18-1801 (M) 91	General Electric M 5371PATP Turbine	35,400 HP
2	NGT-18-1802 91	General Electric M 5371PATP Turbine	35,400 HP
3	NGT-18-1803 91	General Electric M 5371PATP Turbine	35,400 HP
4	NGT-18-1804 90	General Electric M 5371PATP Turbine	35,400 HP
5	NGT-18-1805 90	General Electric M 5371PATP Turbine	35,400 HP
6	NGT-18-1806 91	General Electric M 5371PATP Turbine	35,400 HP
7	NGT-18-1807 91	General Electric M 5371PATP Turbine	35,400 HP
8	NGT-18-1808 90	General Electric M 5371PATP Turbine	35,400 HP
9	NGT-18-1809 91	General Electric M 5371PATP Turbine	35,400 HP
10	NGT-18-1810 91	General Electric M 5371PATP Turbine	35,400 HP
11	NGT-18-1811 90	General Electric M 5371PATP Turbine	35,400 HP
12	NGT-18-1812 91	General Electric M 5371PATP Turbine	35,400 HP
13	NGT-18-1813 91	General Electric M 5371PATP Turbine	35,400 HP
14	NGT-18-1876 90(1)	General Electric M 5382(C) Turbine	37,600 HP
15	NGT-18-1878 90	General Electric M 5382(C) Turbine	37,600 HP
16	NGT——— ?	General Electric M 5382(C) Turbine	37,600 HP
17	NGH-18-1491	#1 Broach Heater	28.3 mm Btu/hr
18	NGH-18-1492	#2 Broach Heater	28.3 mm Btu/hr
19	NGH-21-1401	#1 Eclipse Heater	10.6 mm Btu/hr
20	NGH-21-1411	#2 Eclipse Heater	10.6 mm Btu/hr
21	NGH-21-1239	#1 Black, Sivalls & Bryson Heater	2.3 mm Btu/hr
22	NGH-21-1240	#2 Black, Sivalls & Bryson Heater	2.3 mm Btu/hr
23	NGH-18-1410 90	Broach Heater	25.9 mm Btu/hr
24	EDTG-18-2897	Solar gas turbine, standby electric generator	3,755 HP
25	EDTG-18-2897-1	General Motors diesel turbine standby electric generator	3,350 HP
26	EDG-18-1522	Cummings diesel-electric fire pump	255 HP
27	18-1403	HP/IP five-stage flare	--
	18-1496	emergency flare	
28	18-1494	STV five-stage flare	--
	18-1497	emergency flare	

Exhibit B

AIR CONTAMINANT EMISSION LIMITS, STANDARDS, FUEL SPECIFICATIONS AND OPERATING LIMITS

Exhaust conditions shall be in accordance with the information submitted by the permittee listed in Exhibit E. Permittee shall operate each source in compliance with the applicable emission standard specified in 18 AAC 50.050(a)(1), (b)(1) and (c) and the emission limit, standard, and fuel specification listed below, whichever is most stringent. The annual limit of NO_x emissions from the turbines, in tons per year, is based on maximum emission rates at an ambient temperature of 10° F. The annual emission limit of CO emissions from the turbines is based on operations at maximum rated capacity and an ambient temperature of 10° F. Unless otherwise noted, the performance-based emission limit or operating limit applies to each source in a group of similar sources. The operating limits on the turbines are based on fuel with a lower heating value of 865 Btu/ft^3.

Air Contaminant Source Class or Numbers	Performance-based Emission Limit, Operating Limit, or Fuel Specification	Annual Emission Limit (Tons/year)
A. PARTICULATE MATTER		
All sources	0.05 gr/scf	73
	20% opacity, not to be exceeded more than three minutes per hour	
B. NITROGEN OXIDES		
i. Sources Nos. 1-13, M 5371PATP turbines;	150 ppm(v) NO_x corrected to 15% oxygen in the exhaust;	10,370
ii. Source Nos. 14-16, GE Frames 5C turbines	150 ppm(v) NO_x corrected to 15% oxygen in the exhaust;	2,615
iii. Source No. 24, Solar Centaur turbine;	150 ppm(v) NO_x corrected to 15% oxygen in the exhaust;	12
iv. Source Nos. 17-18, Broach heaters	0.08 lb NO_x per mmBTU fuel; 120% rated capacity	24
v. Source Nos. 19-20, Eclipse heaters	0.08 lb NO_x per mmBTU fuel; 110% rated capacity	8

Exhibit B, continued

Air Contaminant Source Class or Numbers	Performance-based Emission Limit, Operating Limit, or Fuel Specification	Annual Emission Limit (Tons/year)
vi. Source Nos. 21-22, B., S. & B. Heaters	0.16 lb NO_x per mmBTU fuel; 120% rated capacity	4
vii. Source No. 23 Broach heater	0.08 lb NO_x per mmBTU fuel	9
viii. Source No. 25; GM diesel engine	24 pounds NO_x per 1000 HP hour;	8
ix. Source No. 26; Cummings fire pump	24 pounds NO_x per 1000 HP hour;	<1
x. Source Nos. 27-28, Emergency flares - pilot, purge, sweep, and assist gas	140 pounds NO_x per mmscf	51
C. SULFUR DIOXIDE		
i. Source Nos 1-24, 27-28 Natural gas-burning sources	a monthly average of 30 ppm H_2S in the total quantity of gas routinely burned in the gas-fired equipment and in the emergency flare system;	80
ii. Source Nos. 25-26 Diesel-fired turbine and engine	0.20% S in the diesel fuel, annual average; 0.25% S in the diesel fuel, maximum per shipment	<1
D. CARBON MONOXIDE		
i. Source Nos. 1-13 GE M 5371PATP turbines	50 pounds CO/mmscf fuel at 100% rated capacity, corrected to ISO conditions; not to exceed 400 lbs CO/mmscf fuel when tested at less than rated capacity and actual operating conditions	1136

Exhibit B, continued

Air Contaminant Source Class or Numbers	Performance-based Emission Limit, Operating Limit, or Fuel Specification	Annual Emission Limit (Tons/year)
ii. Source Nos. 14-16 GE M 5382(C) turbines	50 pounds CO/mmscf fuel at 100% rated capacity, corrected to ISO conditions; not to exceed 400 pounds CO/mmscf fuel when tested at less than rated capacity and actual operating conditions	286
iii. Source No. 24 Solar Centaur turbine	50 pounds CO/mmscf fuel at 100% rated capacity, corrected to ISO conditions; not to exceed 400 pounds CO/mmscf fuel when tested at less than rated capacity and actual operating conditions	1
iv. Source No. 23 Broach heater	0.018 pounds CO per mmBTU fuel	2
E. VOLATILE ORGANIC COMPOUNDS		
All sources	---	54
F. OPERATING LIMITS		
Source Nos. 1-13 GE M5371PATP Turbines	450 mscf/hr	
Source Nos. 14-16 GE M5382(C) Turbines	520 mscf/hr	
Source Nos. 24-25 Emergency generators	200 hours per year, for each engine	
Source Nos. 17-18 Broach heaters	40 mscf/hr	
Source Nos. 19-20 Eclipse heaters	15 mscf/hr	

Exhibit B, continued

Source Nos. 21-22 B., S. & B. heaters	5 mscf/hr
Source No. 23 Broach heater	40 mscf/hr
Source Nos. 27-28 Emergency flare system	2.0 mmscf/day pilot, purge, sweep and assist gas, monthly average

NOTE 1: During an inspection, the normal fuel consumption of any turbine should not be greater than that noted for the ambient temperature range. If it is, the reason for the greater fuel burning rate should be determined:

	Ambient Temperature deg F	Fuel consumption
Source Nos. 1-13	greater than 60°	385 mscf/hr
GE MS 5371PATP turbines	40 to 60°	400 mscf/hr
	20 to 40°	420 mscf/hr
	0 to 20°	430 mscf/hr
	-20 to 0°	450 mscf/hr
	-40 to -20°	450 mscf/hr
	less than -40°	450 mscf/hr
Source Nos. 14-16	greater than 60°	420 mscf/hr
GE M 5382(C) turbines	40 to 60°	440 mscf/hr
	20 to 40°	460 mscf/hr
	0 to 20°	480 mscf/hr
	-20 to 0°	500 mscf/hr
	-40 to -20°	520 mscf/hr
	less than -40°	520 mscf/hr

NOTE 2: In issuing this permit, the total emissions of each air contaminant from all existing pieces of equipment have been considered. Any net change in emissions must be considered when determining the applicability of 18 AAC 50.300(a)(6)(C) when any future modification or series of modifications to this facility are proposed which would increase emissions of a regulated air contaminant. The cause of, and the resulting net change in emissions from, an increase in the concentration of H_2S in the fuel gas or a decrease in the lower heating value of the gas must also be considered when determining which provisions of 18 AAC 50.300 apply.

Exhibit C

PROCESS MONITORING and TESTING REQUIREMENTS

Permittee shall perform source tests or analyses as described in conditions 8 and 13 and in this exhibit. The source test plan and source testing procedures must be submitted for approval by the Department at least thirty days prior to the scheduled test date. Permittee shall notify the department at least thirty days prior to each source test. An alternate test procedure or emission monitoring plan may be proposed if it can be shown to be of equivalent accuracy and will ensure continuous compliance with the applicable emission standard or limit.

PROCESS STREAM or EXHAUST	PARAMETER AND UNIT OF MEASURE	TESTING PROCEDURE and FREQUENCY
Three M 5371PATP (modified sources)	NO_x ppmvd @ 15% oxygen	Reference method 20, as specified in 40 CFR 60, Appendix A within 180 days of modification.
One GE M 5382(C) (new source)	NO_x ppmvd @ 15% oxygen	Reference method 20, as specified in 40 CFR 60, Appendix A within 180 days of installation.
Fuel gas	sulfur content H_2S, in ppm	ASTM D 4810-88 or ASTM D 4913-89 "colorimetric length of stain tube" test once each month
	fuel consumption	Measurement and recording device accurate to within 4% is adequate to obtain the data required in Exhibit D, item 2.
Diesel fuel	sulfur content % sulfur, by weight	ASTM D 2880-87, each shipment of fuel as delivered
	fuel consumption	Measurement and recording adequate to comply with Exhibit D, item 2.

Exhibit D

FACILITY OPERATING REPORT

A Facility Operating Report must be submitted to the Department of Environmental Conservation, Northern Regional Office, 1001 Noble Street, Suite 350, Fairbanks, AK 99701, semiannually, by the 30th day of January and July each year. This report must include the following information:

NAME OF FIRM
NAME OF FACILITY
PERMIT NUMBER
REPORT PERIOD

QUARTERLY TOTAL
(When indicated, also report weekly or monthly data)

---

1. DAYS OPERATED — Number of hours or days per quarter for each source in each group of sources; total for quarter for each group

Group 1 - Gas turbines
a. Source Nos. 1-13, 24
b. Source Nos. 14-16

Group 2 - Gas-fired heaters
a. Source Nos. 17-23

Group 3 - Emergency diesel engines
a. Source Nos. 25-26

Group 4 - Emergency flares
a. Source Nos. 27-28

Exhibit D, continued

2. FUEL CONSUMPTION

Group 1a - Gas turbines a. Source Nos. 1-13 b. Source No. 14-16	List the daily average ambient temperature and the average hourly fuel consumption for that day for the, turbine with the maximum fuel consumption in each subgroup; list the monthly total fuel consumption for each subgroup.
- - - - - -	- - - - - -
Group 1b - Gas turbine a. Source No. 24	For each class of equipment, indicate the type of fuel and quantity burned per quarter in the appropriate units: mmscf, gallons.
Group 2 - Gas heaters a. Source Nos. 17-23	
Group 3 - Emergency diesel engines a. Source Nos. 25-26	
Group 4 - Emergency Flares a. pilot gas b. sweep gas c. flared gas	

3. FUEL QUALITY

a. Natural gas	Report the monthly concentration of H_2S in ppm.
b. Diesel fuel	Sulfur content of each shipment received; name of the supplier of each shipment

4. SIGNATURE of authorized agent preceded by the statement:

> I am familiar with the information contained in this report and, to the best of my knowledge and belief, such information is true, complete, and accurate.

Exhibit E

PERMIT APPLICATION DOCUMENTATION

September 30, 1974 - letter from Dewey M. Lonnes, ARCO to ADEC submitting the original permit application for the flaring system.

November 14, 1974 - letter, C. P. Falls, ARCO to Dr. M. C. Brewer, ADEC confirming submittal of the original permit application for the Central Compressor Plant, including twelve 25,000 HP gas turbine compressors and two 28.3 mm Btu/hr heaters.

August 2, 1978 - Dames & Moore "Preventions of Significant Deterioration Permit Application Submitted by Atlantic Richfield Company and SOHIO Petroleum Company on behalf of the Prudhoe Bay Unit Owners to the U.S. Environmental Protection Agency" (North Slope PSD I).

December 18, 1978 - letter, W. P. Metz, ARCO to S. W. Hungerford, ADEC requesting renewal of permit with amended application form for the new sources described in PSD I application.

May 16, 1979 - letter, W. P. Metz, ARCO to E. W. Mueller, ADEC requesting amendment of permit to include one 25.9 mm Btu/hr heater described in PSD II application.

May 17, 1979 - EPA approval to construct PSD-X79-05

September 28, 1979 - Radian "PSD Permit Application for the Prudhoe Bay Unit Produced Water Injection, Low Pressure Separation, and Artificial Lift Projects" (North Slope PSD II).

January 14, 1980 - Radian "Technical Note; Air Quality Impacts of Varying Individual Turbine Horsepower and Heater Capacities at Sites of Proposed New Sources in the Prudhoe Bay Oil Field."

March 5, 1980 - letter, W. P. Metz, ARCO to E. W. Mueller, ADEC, with attachments, requesting amendment of permit to include one 25,000 HP turbine described in PSD II application.

June 13, 1980 - EPA approval to construct PSD-X80-09.

December 3, 1980 - Radian "Technical Note; Air Quality Impacts in the Prudhoe Bay Oil Field Resulting from an Exchange of Emission Sources" deleting three turbines described in PSD I (North Slope PSD "swap").

May 7, 1981 - letter D. P. Dubois, EPA to P. B. Norgard, ARCO approving the PSD equipment swap.

Exhibit E, continued

June 2, 1989 - letter, T. H. Pinson, ARCO to L. D. Verrelli, ADEC, transmitting ENSR Consulting and Engineering "Application to Modify PSD Permit for Prudhoe Bay Unit Central Compressor Plant (GHX-1 Project)"

November 22, 1989 - letter, T. H. Pinson, ARCO to L. D. Verrelli, ADEC, in response to notice of the incompleteness of the original application.

December 28, 1989 - letter, T. H. Pinson, ARCO to L. D. Verrelli, ADEC, providing supplementary information.

December 28, 1989 - letter, J. H. Coutts, ADEC to T. H. Pinson, ARCO, approving modification of one existing turbine.

January 30, 1990 - letter, L. D. Verrelli, ADEC to T. H. Pinson, ARCO, granting construction waiver.

March 6, 1990 - letter, T. H. Pinson, ARCO to L. D. Verrelli, ADEC, clarifying emission factors.

May 8, 1990 - letter, T. H. Pinson, ARCO to L. D. Verrelli, ADEC, supplying information to justify selection of particular turbine models.

June 26, 1990 - letter, L. D. Verrelli, ADEC to T. H. Pinson, ARCO, granting construction waiver.

July 5, 1990 - letter, W. D. McGee, ADEC to T. H. Pinson, ARCO, approving modification of three existing turbines.

September 12, 1990 - letter, T. H. Pinson, ARCO (confidential).